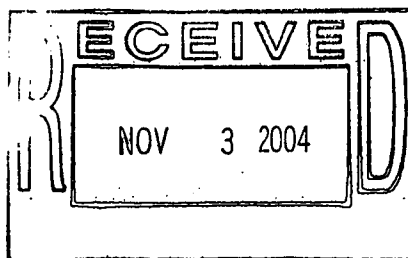


**Industrial Area and Buffer Zone
Sampling and Analysis Plan
Addendum #IABZ-05-01
IHSS Group NE-1
PAC NW-1505
(North Firing Range)**



November 2004

ADMIN RECORD

BZ-A-000755

**Industrial Area and Buffer Zone
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PAC NW-1505
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Approval received from the U.S. Environmental Protection Agency

(_____).

Approval letter contained in the Administrative Record.

November 2004

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ACRONYMS

AL	action level
BZ	Buffer Zone
DOE	U.S. Department of Energy
ft	foot
FY	Fiscal Year
HRR	Historical Release Report
IA	Industrial Area
IABZSAP	Industrial Area and Buffer Zone Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
PAC	Potential Area of Concern
PCOC	potential contaminant of concern
RFCA	Rocky Flats Cleanup Agreement
RFETS or Site	Rocky Flats Environmental Technology Site
SAP	Sampling and Analysis Plan
UBC	Under Building Contamination
WRW	wildlife refuge worker

1.0 INTRODUCTION

This Industrial Area (IA) and Buffer Zone (BZ) Sampling and Analysis Plan (SAP) (IABZSAP) Addendum #IABZ-05-01 includes Individual Hazardous Substance Site (IHSS) Group-specific information, proposed sampling locations, and potential contaminants of concern (PCOCs) for Potential Area of Concern (PAC) NW-1505, the North Firing Range, at the Rocky Flats Environmental Technology Site (RFETS or Site). PAC NW-1505 is proposed for characterization during Fiscal Year (FY) 2005 (05). Note that while the North Firing Range is a PAC, it is handled in the same manner as an IHSS. This IABZSAP Addendum is a supplement to the IABZSAP (DOE 2004). This PAC is part of IHSS Group NE-1, which also consists of the A-, B-, and C-Series Ponds. The ponds are east of the IA. The location of PAC NW-1505 is shown on Figure 1.

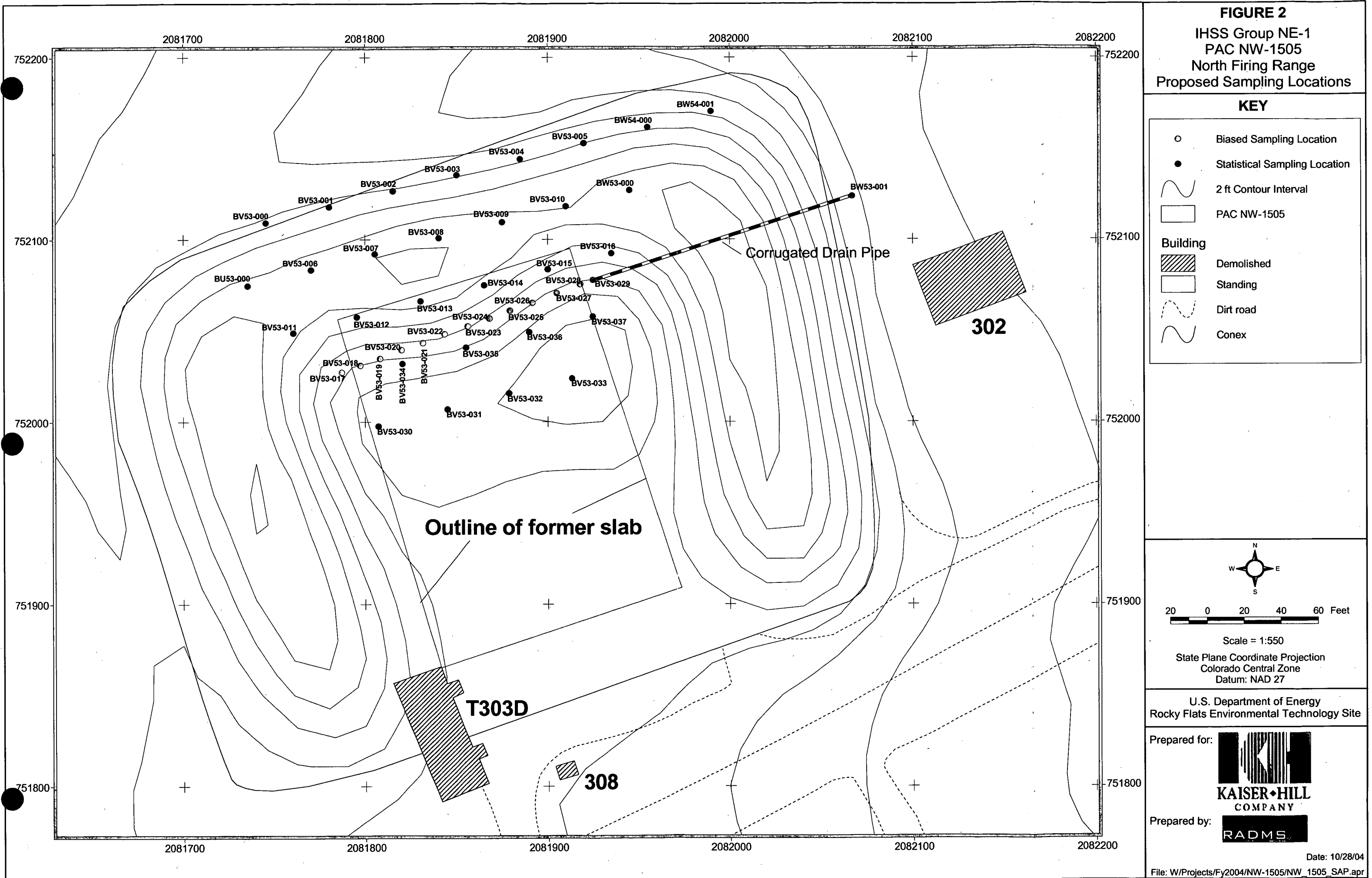
2.0 POTENTIAL AREA OF CONCERN INFORMATION

Existing information for the IHSS Group is available in the Annual Update for the Historical Release Report (HRR) (DOE 2001). Where appropriate, personal communications (Devico 2004a, 2004b) were used to supplement the HRR. Process knowledge indicates PAC NW-1505 may be the site of lead and other metal contamination associated with operation of the North Firing Range. There are no existing data for soil within the limits of PAC NW-1505.

PAC NW-1505 consists of the RFETS North Firing Range. The range was constructed in 1983 and upgraded in 1994 and again in 1996. The principal firearms used at the range were pistols and rifles; however, machine guns up to 0.50 caliber and shotguns were also fired. Shotgun practice was confined to target shooting at paper silhouettes; no clay pigeons were used.

Sources state that no solvent spills occurred at the site. Weapons were cleaned in the range office; however, all solvents and solvent-soaked rags were disposed of in Building 121. No explosives or armor-piercing ammunition were used. Derelict automobiles were occasionally used to simulate hostage situations. These vehicles were purged of fluids prior to use. The vehicles were positioned in the middle of the target area, in front of the bullet traps. Frangible bullets (that fragment and form a powder on impact) were the only projectiles fired at the vehicles. The frangible bullets contained zinc, but not lead. As of spring of 2004, there were no significant oil, coolant, or lubricant stains on the floor of the range or in the parking area to the south. The range was rinsed with 200 to 300 gallons of water several times a year. Rinse water and any natural precipitation exit the range to the east through a corrugated metal pipe (approximately 150 to 175 feet [ft] long) under the northeastern corner of eastern berm (Figure 2).

Metals, particularly lead, are the only PCOCs at PAC NW-1505. The PCOCs are listed in Table 1 and were determined based on process knowledge (DOE 2001) and discussions with the range officer (Devico 2004a, 2004b). Between 1983 and 1996, prior to construction of the existing bullet trap mechanism, rounds fired at targets were caught in soil on the southern face of the northern berm. The southern face was cannibalized as part of construction to update the range in 1996. Inspection of photographs indicates soil was removed from approximately 10 ft of the southern face of the northern berm and deposited either on top of or on the northern face of the northern berm.



2079000 2080000 2081000 2082000 2083000 2084000 2085000 2086000

**IHSS Group NE-1
PAC NW-1505**

752000

751000

750000

749000

748000

747000

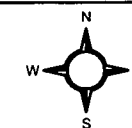
2079000 2080000 2081000 2082000 2083000 2084000 2085000 2086000

FIGURE 1

**IHSS Group NE-1
PAC NW-1505
North Firing Range
General Location**

KEY

- PAC NW-1505
- Building demolished
- Building standing
- Pond
- Paved road
- Dirt road
- Stream
- 5-ft topographic contour



200 0 200 400 600 800 1000 Feet

Scale = 1:7500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared for:



**KAISER-HILL
COMPANY**

Prepared by:



Date: 10/28/04

File: W:\Projects\Fy2004\NW-1505\NW_1505_SAP.apr

Table 1
IHSS Group NE-1, PAC NW-1505, Potential Contaminants of Concern

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Data Sources	Sampling Type
NE-1	PAC NW-1505	Metals	Surface Soil	HRR (DOE 2001) and process knowledge (Devico 2004)	Statistical and Biased

Additional southern face soil may have been used at that time to level the floor area of the range, most likely in the northern part of the structure; however, this activity has not been documented. From 1983 to 1994, the floor of the range consisted of a rectilinear set of concrete pathways and firing lines with large open areas of pea gravel between. Lead bullets or fragments may have landed in the pea gravel in the target area. The pea gravel was removed and replaced by asphalt when the range was upgraded. However, there is the potential for lead contamination in the soil near the target area.

3.0 SAMPLING

The proposed sampling and analysis specifications for PAC NW-1505 are listed, by sampling location, in Table 2. The proposed sampling locations are shown on Figure 2. Biased samples will be collected along the foot of the southern face of the northern berm. Initially only the A interval (0.0-0.5 ft) will be sampled. However, if Rocky Flats Cleanup Agreement (RFCA) (DOE et al. 2003) wildlife refuge worker (WRW) action level (AL) exceedances for metals are found, sampling will step out to the south and/or samples will be collected from deeper intervals.

One biased sample will be collected from each end of the drainage pipe in the northeastern corner of the facility. One of these samples will be collected from the western side of the berm (inside the firing range – BV53-029) and the other one from the eastern side of the berm (outside the firing range – BW53-001). Only the A interval will be sampled. The drainage pipe itself and any sediment within the drainage pipe will be removed. Characterization of the sediment within the pipe may be necessary for waste disposal.

Statistical samples will be collected over the northern and southern faces of the northern berm. Photographs show that the southern face of the berm was dug out during the range upgrade and soil was dumped on top of or on the northern face of the northern berm. Because the soil from the southern face of the northern berm was excavated and most likely placed on the northern face of the berm, samples from the statistical locations along the toe of the northern face will be collected from the A (0.0-0.5 ft) and B (0.5-2.5 ft) intervals. Because soil, potentially containing lead, may have been used to level the floor area of the shooting structure, statistical samples will be collected from the northern third of the range structure.

After characterization starts, the number and type of samples may change based on sampling results. Sampling locations will be field checked and adjusted if necessary through the consultative process. Prior to analysis, each sample will be sieved to obtain a homogeneous sample and remove bullets, fragments, and other debris. The type and volume of bullets, fragments, or debris removed will be recorded by sampling location and depth interval.

The eastern and western berms, gravel parking lots, and floor of the facility will not be sampled because these locations did not contain targets. Bullets or bullet fragments would be present in these areas only due to ricochets; however, the facility was constructed to suppress ricochets. A visual inspection of the entire area was conducted in the spring of 2004. No bullets were found. Spent casings were found on that day; however, they are routinely collected for recycling.

Duplicate samples will be collected at a minimum ratio of 1 in 5. Analysis will be conducted on site using method SW846-6200. Of the samples collected, 1 in 5 will be sent off site for analysis using method SW-846 6010.

Table 2
PAC NW-1505 Sampling Specifications

Location Code	Easting	Northing	Media	Depth Interval (ft)	Analyte	On-Site Method	Off-Site Method	Comment
BV53-000	2081745.327	752109.143	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-000	2081745.327	752109.143	Subsurface Soil	0.5-2.5	Metals	6200	6010	Statistical at northern berm
BV53-001	2081780.252	752117.875	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-001	2081780.252	752117.875	Subsurface Soil	0.5-2.5	Metals	6200	6010	Statistical at northern berm
BV53-002	2081815.177	752126.607	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-002	2081815.177	752126.607	Subsurface Soil	0.5-2.5	Metals	6200	6010	Statistical at northern berm
BV53-003	2081850.102	752135.339	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-003	2081850.102	752135.339	Subsurface Soil	0.5-2.5	Metals	6200	6010	Statistical at northern berm
BV53-004	2081885.027	752144.071	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-004	2081885.027	752144.071	Subsurface Soil	0.5-2.5	Metals	6200	6010	Statistical at northern berm
BV53-005	2081919.952	752152.803	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-005	2081919.952	752152.803	Subsurface Soil	0.5-2.5	Metals	6200	6010	Statistical at northern berm
BW54-000	2081954.877	752161.535	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BW54-000	2081954.877	752161.535	Subsurface Soil	0.5-2.5	Metals	6200	6010	Statistical at northern berm
BW54-001	2081989.802	752170.267	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BW54-001	2081989.802	752170.267	Subsurface Soil	0.5-2.5	Metals	6200	6010	Statistical at northern berm

Industrial Area and Buffer Zone Sampling and Analysis Plan Addendum #LABZ-05-01

Location Code	Easting	Northing	Media	Depth Interval (ft)	Analyte	On-Site Method	Off-Site Method	Comment
BU53-000	2081735.427	752074.531	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-006	2081770.352	752083.263	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-007	2081805.277	752091.995	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-008	2081840.202	752100.727	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-009	2081875.127	752109.459	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-010	2081910.052	752118.191	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BW53-000	2081944.976	752126.923	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-011	2081760.451	752048.651	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-012	2081795.376	752057.383	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-013	2081830.301	752066.115	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-014	2081865.226	752074.847	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-015	2081900.151	752083.579	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-016	2081935.076	752092.311	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical at northern berm
BV53-017	2081787.140	752027.109	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-018	2081797.324	752030.861	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-019	2081808.044	752034.613	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-020	2081819.836	752039.437	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-021	2081831.628	752043.189	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm

Location Code	Easting	Northing	Media	Depth Interval (ft)	Analyte	On-Site Method	Off-Site Method	Comment
BV53-022	2081843.420	752048.013	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-023	2081856.284	752052.301	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-024	2081868.076	752056.589	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-025	2081879.332	752060.877	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-026	2081891.660	752065.165	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-027	2081905.060	752070.525	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-028	2081917.924	752075.349	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along foot of south face of the northern berm
BV53-029	2081924.892	752077.493	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along drain line
BV53-030	2081807.137	751997.647	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical below northern 1/3 of slab.
BV53-031	2081845.018	752006.841	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical below northern 1/3 of slab.
BV53-032	2081878.854	752015.668	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical below northern 1/3 of slab.
BV53-033	2081913.426	752023.759	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical below northern 1/3 of slab.
BV53-034	2081820.377	752031.851	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical below northern 1/3 of slab.
BV53-035	2081855.316	752040.677	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical below northern 1/3 of slab.
BV53-036	2081889.888	752049.136	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical below northern 1/3 of slab.
BV53-037	2081924.827	752057.595	Surface Soil	0.0-0.5	Metals	6200	6010	Statistical below northern 1/3 of slab.
BW53-001	2082066.931	752123.588	Surface Soil	0.0-0.5	Metals	6200	6010	Biased along drain line

4.0 REFERENCES

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